

# Weekly Report

## 12/28/2015 - 01/03/2015

Jing XIA

January 10, 2016

## 1 Summary

This week I mainly focus on the GeoScanner implementation.

## 2 Projects

### 2.1 The GeoScanner Project

I've update the server to communicate with the interface by Ajax calls. I further discussed with XumengWang about the quad-tree encoding. The basic principle is to enable easy compression and direct comparison with compressed encoding. It is now finalized and Xumeng is implementing the data structure initialization.

Xumeng Wang and I have made several progress on the implementation.

- Xumeng has loaded the data and extracted users' movements in half an hour. For each location, she has encoded it into a quadtree sequence.
- I then generated a tree with the quadtree sequence and generated a compressed sequence of the trajectory. Now we are able to compress the same trajectory data from 77MB to 57MB (lossless compression) 47MB (lossy compression). More importantly, even the lossy compression data can be used directly for trajectory matching. Xumeng will generate the lossy data for 24-hour data. But to speed up the query and matching, we will also implement a hashing function that maps a given trajectory to its nearest neighbor candidates.
- For the front end, I've implemented the leaflet map and three versions of drawing trajectories (SVG, canvas and WebGL). WebGL is most likely to be adopted for its high scalability.

I will start hashing implementation as well as front-end drawing.